REMARKS

Reconsideration and further examination is respectfully requested. Claims 1-52 are currently pending in this application.

Rejections under 35 U.S.C. §102(e)

Claims 1-5, 9-22 and 26-34 were rejected under 35 U.S.C. §102(e) as being anticipated by Chaudhuri (US 2002/003864A1)

Chaudhuri et al. (US 2002/003864 A1):

Chaudhuri describes, at paragraph 77:

"...The first-hop router receives a request to create a lightpath from a source. The first-hop router creates a lightpath setup (connection) message and sends it towards the destination of the lightpath where it is received by the last-hop router. If the originator of the request is not the source, the originator tunnels the request to the first-hop router. The lightpath setup is sent from the first-hop router on the default-routed lightpath as the payload of a normal IP packet with router alert. A router alert ensures that the packet is processed by every router in the path. A channel is allocated for the lightpath on the downstream link at every node traversed by the setup message. The identifier of the allocated channel is written to the setup message, which is then sent to the next node along the selected route. If no channel is available on some link, the setup fails, and a message is returned to the first-hop router informing it that the lightpath cannot be established. ..." (Emphasis added by Applicant)

Thus Chaudhuri describes a system and method for establishing light paths, where all switches in the light path are hard-configured in response to the connection request. Chaudhuri further states, at paragraph 77 "...After a channel has been allocated at a node and the setup message has been sent on to the next node along the route, the router communicates with the OLXC to reconfigure the OLXC to provide the desired connectivity..."

With regard to control information, Chaudhuri states at paragraph 46:

"...On each link within the network, one channel is assigned as the default routed (one hop) lightpath. The routed lightpath provides router-to-router connectivity between adjacent

nodes over this link. These routed lightpaths reflect (and are thus identical to) the physical topology.... All control messages are sent in-band on a routed lightpath as regular IP datagrams, potentially mixed with other data but with the highest forwarding priority. Control traffic may use any routed path....."

Accordingly, Chaudhuri a connection oriented system that uses pre-defined channels for forwarding control data to set up 'lightpaths.'

The Examiner states, at pages 11-12 of the Office action:

"Regarding claims 1-34, Examiner disagrees with Applicants' assertion that Chaudhuri do not disclose the limitations of claim 1. One the contrary, Examiner respectfully notes that Chaudhuri et al. disclose that the optical switching logic (i.e., the optical layer cross-connects) selectively forward an optical data stream having a given wavelength to either one of the optical interfaces for output on at least one optical fiber or to routing logic depending upon whether that data stream is data output should be forwarded to an adjacent optical switch node or a message for the routing logic. Chaudhuri et al. also disclose that the routing logic may process traffic in addition to control messages (page 2, paragraph [0014] and therefore would also selectively receiving data streams destined for the routing logic... Examiner also respectfully disagrees with Applicant's assertion on page 16 of their response that "there is no mention of data being forwarded either to a router or out the switched based on previously received routing information in Chaudhuri." On the contrary, Chaudhuri et al disclose that the routing logic may receive a setup message (selectively received from inputs that include control messages and data) and retrieve routing information from the message that is used to dynamically control the forwarding of subsequent data streams on the channel route that is specified by the received setup message (page 6, paragraph [0077] and page 7, paragraphs [0086] and [0089]..."

Applicants note that the Examiner appears to be referring to the portion of Chaudhuri which describes the establishment of an IP tunnel, or a "connection" which is used for packet forwarding. Applicants also note that Chaudhuri clearly distinguishes a connection oriented network from a connectionless network. For example at page 1, paragraph [0006] states:

"... There is an underlying conflict, however, between the typical datagram (connectionless) service that supports the best-effort data delivery of the Internet and virtual

circuit (connection-based) service. This conflict is exacerbated in the world of optical networks..."

Chaudhuri also explicitly states, at page 4, paragraph [0044] :

"...Each router advertises the links associated with itself, and receives advertisements from all other routers. Thus, each router will eventually end up with a representation of the entire network topology. In traditional, IP only OSPF, OSPF also uses a shortest path algorithm at each node to calculate the next hop along the route. Because all routers are using the same topology and the same shortest path algorithm, packets will end up at their destination. If a node has the wrong topology, or uses the wrong algorithm, routing loops could occur... [0044] For purposes of the present invention, the shortest path routing feature of OSPF is not being used for managing optical connectivity. The present invention uses OSPF or similar IP-based routing protocols to propagate information about optical network resources. An arbitrary algorithm is then used at the first-hop router (e.g., an adaptive routing algorithm) to calculate the lightpath route for each new request. For purposes of the present invention, the shortest path routing feature of OSPF is not being used for managing optical connectivity... An arbitrary algorithm is then used at the first-hop router (e.g., an adaptive routing algorithm) to calculate the lightpath route for each new request..."

Applicants' claim 1, as amended, is directed to a method and apparatus for "performing connectionless packet forwarding" and is thus distinguishable from Chaudhuri. Applicants describe the use of OSPF protocol (described as connectionless by Chaudhuri) at page 22 of Applicants' specification. Chaudhuri, however, explicitly teaches that OSPF is *not* used for performing connectionless forwarding. Rather, Chaudhuri describes the use of connection based IP tunnels. For at least the reason that Chaudhuri fails to teach such a limitation, the rejection under 35 U.S.C. §102 is overcome and should be withdrawn.

Independent claims 18 and 35 include limitations similar to those that differentiate claim 1 over Chaudhuri and for at least this reason, those claims are also patentably distinct over Chaudhuri, and the rejection should be withdrawn. Dependent claims 2-17, 19-34 and 36-49 are dependent claim sets which server to add further distinctive limitations to their respective parent

claims 1, 18 and 35, but are allowable for at least the reason put forth above with regard to their parent claims.

Rejections under 35 U.S.C. §103

Claims 6-8 and 23-25 were rejected under 35 U.S.C. §103(a) as being unpatentable over Chaudhuri. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Applicants submit that one would not be motivated to modify the teachings of Chaudhuri to provide a system that uses a connectionless protocol, because Chaudhuri teaches that it is preferable to use a virtual circuit. It is well established that "..."[I]n considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom." *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968)..." Applicants submit that one would infer, from the teachings of Chaudhuri, that the connection oriented routing taught by Chaudhuri was preferable to connectionless routing such as OSPF from at least the paragraphs of

Chaudhuri provided above. Accordingly, for at least the reason that there is no motivation to modify Chaudhuri, the rejection is improper and should be withdrawn.

Claims 35-49 were rejected under 35 U.S.C. §103(a) as being unpatentable over Chaudhuri et al. in view of Kirby (U.S. 6,647,208) B1.

Kirby:

Kirby describes, at lines 27-39:

> "...based on the core network topology, hybrid switch circuits communicate amongst each other and peripheral nodes over at least a first dedicated wavelength to establish a flow path and assign a wavelength to be used for routing optical data signals. Each hybrid switch circuit includes an optical switch for switching optical signals based on the assigned wavelength to an optical fiber in the established flow path... Additionally, each hybrid switch circuit includes an electronic controller for monitoring traffic on the first dedicated wavelength and controlling the associated optical switch. *Once a flow path is established, data is transferred on an assigned wavelength between peripheral nodes on the core network. ...*" (Emphasis added by Applicant)

Kirby further states, at column 6, lines 21-25:

> "... Optical switch 205, on the other hand, is a slave device that directs data from optical inputs 230 to optical outputs 247 through flow paths based upon settings issued by optical switch control processor 210 rather than upon destination information encoded within the signals themselves. Routing an optical signal based on information within a given data packet is less efficient because the entire contents of such a data packet or optical signal must be stored and, after determining the destination of the signal based on information within the signal, the original signal and its contents must be re-created and transmitted to the appropriate destination..." (Emphasis added by Applicant)

It is clear, from reviewing the figures and specification of Kirby that Kirby describes a source routed system, wherein the path from a source to a destination node is determined at the source and propagated through the intermediate nodes to the destination using the dedicated channel T1 (232 in Figure 2). That is, a circuit is set up between the source and the destination. For example, Kirby describes, at column 7, lines 10-11 "...the dedicated wavelength T1 supports

the setup of data transfers between two or more regional networks..." Kirby teaches against 'using destination information encoded within the signals themselves...' as 'inefficient', but rather dedicates a separate channel for control. Such a tunneled connection is similar to the virtual circuit described in Chaudhuri.

In order to support a rejection under 35 U.S.C. §103, *every* limitation of the claims should be shown or suggested by the combination of references. Applicants' submit that the combination of Kirby and Chaudhuri fails to meet this requirement for at least the reason that the combination fails to teach 'performing connectionless packet forwarding' as recited in the claim.

Accordingly, as described above with regard to Chaudhuri, the claimed invention includes the capability of '. wherein the routing information is used to dynamically control the forwarding of subsequent optical data streams transmitted at the given wavelength through the optical switch logic to one of the output optical interfaces on the at least one optical fiber for performing connectionless packet forwarding. ' No such structure is shown or suggested in Chaudhuri or Kirby, or the combination thereof. Accordingly, for at least this reason it is respectfully submitted that the rejection is overcome and should be withdrawn. Dependent claims 36-49 serve to further limit claim 35 and are allowable for at least the reasons put forth with regard to claim 35.

Conclusion:

- Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Lindsay G. McGuinness, Applicants' Attorney at 978-264-6664 so that such issues may be resolved as expeditiously as possible.

For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,

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